

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Allen Wood on 06/06/2008.

The application has been amended as follows:

**Claim 12 (amended):**

A watermark information detecting method comprising:

an image inputting step for reading a printed document with confidential information embedded as an input image, by preparing plural dot patterns depicting waves having wave directions that are changed according to symbols assigned to the dot patterns and by arranging the dot patterns in combination with each other;

a filtering step for ~~{filtering of the input image using detection filters having the same wave directions as the dot patterns,}~~obtaining, in each pixel of the input image, a filter type matrix related to a type of detection filter with a maximum output value among all detection filters and a filter output value matrix related to the output value of the detection filter, by performing filtering of the input image after preparing the detection filter having the same wave direction as the dot patterns to be the same number of types in order to detect the dot patterns from the input image;

a position searching step for determining the position of the dot patterns using a position searching template, while moving the position searching template with regard to a filter output value matrix;

a symbol determining step for obtaining a symbol matrix by determining the symbol assigned to the dot patterns at locations determined in the position searching step;

a border determining step for determining a border of the printed document; and an information decoding step for decoding the confidential information embedded in the printed document based on the dot patterns embedded inside the border.

**Claim 17 (amended):**

A watermark information detecting method comprising:

an image inputting step for reading a printed document with confidential information embedded as an input image, by preparing plural dot patterns depicting waves having wavelengths that are changed according to symbols assigned to the dot patterns and by arranging the dot patterns in combination with each other;

a filtering step for ~~[filtering of the input image using detection filters having the same wave directions as the dot patterns,]~~obtaining, in each pixel of the input image, a filter type matrix related to a type of detection filter with a maximum output value among all detection filters and a filter output value matrix related to the output value of the detection filter, by performing filtering of the input image after preparing the detection filter having the same wave direction as the dot patterns to be the same number of types in order to detect the dot patterns from the input image;

a position searching step for determining the position of the dot patterns using a position searching template, while moving the position searching template with regard to a filter output value matrix;

a symbol determining step for obtaining a symbol matrix by determining the symbol assigned to the dot patterns at locations determined in the position searching step;

a border determining step for determining a border of the printed document; and an information decoding step for decoding the confidential information embedded in the printed document based on the dot patterns embedded inside the border.

2. The following is an examiner's statement of reasons for allowance: While Shaked et al ( US 6,763,121) teaches the watermark system 10 can be implemented in a variety of ways and in a variety of components that are commonly found in a typical computer system. FIGS. 2(a)-2(d) illustrate block diagrams of exemplary computer systems in which the watermark system 10 of the present invention can be implemented. For example, referring to FIG. 2(a), the watermarking module 44 and the watermark recovery module 54 may both reside in a memory of a personal computer (PC) 200. The PC 200 may be coupled to an all-in-one machine 204 (e.g. a multi-function office machine) as shown. For example, the all-in-one office machine 204 can be an integrated scanner, printer, and facsimile machine that utilize a half-tone process to render images. The all-in-one machine 204 includes a print engine 208 for rendering an image by utilizing a half-tone process and a scan engine 212 for scanning documents and generating a digital version of these documents. The operation and construction of the print engine 208 and

the scan engine 212 are generally well known to those of ordinary skill in the art and will not be described herein. It is noted that the print engine 208 can be any rendering engine that renders an image by utilizing a half-tone process ( see column 5, lines 4-25).Yen et al ( US 2002/0180995) teaches in paragraph [0040-0051] a method of detecting information embedded for each of two or more different halftone modulations, applying a respective filter to the image to identify an ordered sequence of halftone modulations embedded in the image and a histogram number of each dither matrix specify the number of arrangement of dots to ass at each micro screen image level. None teaches arranging position of dot patterns in order for the sum of filter output value to be maximum by performing filtering process on the whole surface of the input image and by using the signal position searching template. Accordingly, even when the image is expanded or contracted due to displacement of paper, etc., the position of dot patterns can be correctly detected and confidential information can be correctly detected from the printed document. The Examiner finds no reason or motivation to combine the above references in an obviousness rejection thus placing the application in condition for allowance.

Any comments considered necessary by applicant must be submitted on later than the payment of the issue fee and to avoid processing delays should preferably accompany the issue fee. Such submissions should be clearly labeled, comments on statement of reasons for allowance.

Claims 1-20 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/  
Primary Examiner, Art Unit 2624

Nancy Bitar

06/06/2008